

**Performance Audit
Water System Security**

August 2005

**City Auditor's Office
City of Kansas City, Missouri**

August 23, 2005

Honorable Mayor and Members of the City Council:

The Water Services Department complied with federal requirements to assess vulnerabilities of the water system to terrorist attacks or other intentional acts and to plan for emergency responses. Following the terrorist attacks of September 11, 2001, Congress passed the Bioterrorism Act which required the city to complete an assessment and submit documentation to the Environmental Protection Agency. We confirmed that the city met these requirements.

City staff erred by not following contracting procedures. The city contracted with a consultant to assess the vulnerabilities, but the consultant completed significant work before the contracts were approved. In addition, the work was completed under two contracts structured so that the contracts would both be under the threshold requiring City Council approval.

The city hasn't fully developed mechanisms and processes to address homeland security issues. We recommend that as the City Manager consolidates security functions, he ensures that the city addresses updating security information; coordinating among departments and agencies; monitoring security improvements; defining the City Council's role; and reporting performance information.

We provided a draft of the report to the City Manager and the Director of Water Services on April 19, 2005. Management's response is appended. We appreciate the courtesy and cooperation extended to us during this project by the staff of the Water Services Department. The audit team for this project was Joyce Patton and Michael Eglinski.

Mark Funkhouser
City Auditor

Water System Security

Table of Contents

Introduction	1
Objectives	1
Scope and Methodology	1
Background	2
Findings and Recommendations	3
Summary	3
Water Services Assessed Vulnerabilities of Water System and Planned Emergency Response	3
Water Services Submitted Assessment and Plans to Federal Government	4
Bioterrorism Act Required Water Assessment and Plan	4
City Staff Erred by Not Following Contracting Procedures	5
Consultants Completed Much of the Work Before Contracts Were in Place	5
City Staff Moved Money between Contracts, Avoiding Council Approval	5
City Needs Tools to Address Homeland Security Issues	6
Updating Information and Coordination Among Departments Strengthens Security	7
City Should Monitor Security	8
City Should Define Council Role and Report Performance Information	9
Recommendation	10
Appendices	11
Appendix A: Method to Identify Good Practices	11
Appendix B: City Manager's Response	15

Introduction

Objectives

We conducted this performance audit of water security pursuant to the city charter, which establishes the Office of the City Auditor and outlines the City Auditor's primary duties. We designed the audit to answer:

- Did Kansas City assess the vulnerability of the water system and plan for emergency response as required by the federal government?
- Is Kansas City using the vulnerability assessment appropriately?

Scope and Methodology

Our review focused on whether the city complied with the Bioterrorism Act and whether the city was using the vulnerability assessment appropriately. We conducted this audit in accordance with generally accepted government auditing standards. Our methods included:

- Reviewing the Bioterrorism Act of 2002.
- Reviewing the city's vulnerability assessment and emergency response plan.
- Interviewing experts on water security, law enforcement, homeland security, public health, and emergency management.
- Interviewing managers in the Water Services Department.
- Reviewing contracts with the consultants who did the vulnerability assessment.
- Developing a list of good practices for using a vulnerability assessment and emergency response plan and discussing those with the Director of Water Services.
- Reviewing the city code to understand the role of the Emergency Management Office.

- Reviewing our work with the Law Department to ensure we did not disclose sensitive security information.

We did not evaluate the quality of the city's vulnerability assessment or emergency response plan.

We omitted no privileged or confidential information from this report.

Background

Water supplies throughout the nation are vulnerable to contamination and damage from terrorist attacks. Following the terrorist attacks of September 11, 2001, the federal government required water utilities to assess vulnerabilities and plan emergency responses. Vulnerability assessments should help utilities plan for security upgrades, improve procedures, and develop response plans to reduce risks to the utility.

The Environmental Protection Agency provides grants to utilities to complete assessments and acts as the lead federal agency for assuring protection of the nation's water infrastructure. Kansas City used a grant from the EPA to cover \$115,000 of the cost to assess security vulnerabilities.

Findings and Recommendations

Summary

The Water Services Department assessed security vulnerabilities of the water system and planned how to respond to an emergency, complying with federal requirements. Water Services contracted with Black & Veatch to assess the vulnerabilities. Our work, however, found problems in the contracting process. Much of the contract work was completed before the contracts were executed. City staff moved money between two contracts to keep them under the threshold where Council approval would be required.

Local governments' emergency preparedness had focused on natural disasters and disruptions in service rather than intentional acts. However, the federal government has identified local infrastructure as a possible target for terrorists. Local governments now must coordinate with federal agencies to protect infrastructure and safeguard hazardous materials that could be used as weapons. Experts recommend general practices for cities to use vulnerability assessments and emergency response plans, and to address homeland security issues. As the city addresses homeland security, the City Manager should assure the city addresses updating security assessments and plans; coordinating security and response; testing and monitoring security improvements; providing information to the City Council and the public; and defining the City Council's role.

Water Services Assessed Vulnerabilities of Water System and Planned Emergency Response

The Water Services Department assessed security vulnerabilities of the water system and planned how to respond to an emergency, complying with federal requirements. Following the terrorist attacks of 2001, the federal government required water utilities to prepare for potential attacks and provide specific documents to the Environmental Protection Agency (EPA). The EPA confirmed Kansas City's compliance.

Water Services Submitted Assessment and Plans to Federal Government

The Water Services Department assessed vulnerabilities of the water system and planned how to respond to an emergency, satisfying requirements of the federal government. The city contracted with Black & Veatch, an engineering firm, to assess facilities for vulnerabilities. Black & Veatch reported the vulnerabilities to Water Services.

The Water Services Department submitted the vulnerability assessment to the EPA in March 2003 and certified completion of the emergency response plan in September 2003. EPA sent the city confirmation all items had been received in September 2003.

We reviewed the assessment and response plan. The vulnerability assessment analyzes security weaknesses at water facilities. The assessment makes recommendations to correct weaknesses. Black & Veatch estimate that implementing all of the recommendations would cost about \$30 million. The emergency response plan contains procedures for the facility if it was struck and contact information.

Bioterrorism Act Required Water Assessment and Plan

Following the terrorist attacks of September 11, 2001, the federal government required water utilities to assess vulnerabilities and plan emergency responses. Congress passed the Bioterrorism Act in 2002, requiring water utilities to assess the vulnerability of facilities and then develop an emergency response plan outlining how the utility would respond should a terrorist or other intentional act occur.

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002

Congress passed The Public Health Security and Bioterrorism Preparedness and Response Act (Bioterrorism Act) in 2002. Under the act water utilities serving populations greater than 3,300 must assess their system's vulnerability to a terrorist attack or other intentional acts. The assessments cover pipes and constructed conveyances; physical barriers; and water collection, pretreatment, treatment, storage, and distribution facilities. Water utilities must also certify to the EPA that the utility completed an emergency response plan.

Source: The Public Health Security and Bioterrorism Preparedness and Response Act of 2002.

City Staff Erred by Not Following Contracting Procedures

City staff didn't follow normal procedures when contracting for the vulnerability assessment. Contracts should be completed and agreed to before a contractor begins work. However, the consultants – Black and Veatch – completed much of the work before contracts were in place. City code requires contracts above a certain threshold to be approved by the City Council. City staff moved money between contracts, keeping the value of each contract below the threshold. Consequently, the City Council didn't approve either contract.

Why was the work done under two contracts?

Two departments, Water Services and Law, entered into contracts with Black and Veatch to complete the assessment. The contract with Water Services called for the consultant to help city staff set goals, objectives, and scope for the assessment. The contract with Law called for surveying the security of facilities, assessing vulnerabilities, recommending ways to improve security, estimating the cost of those recommendations, and writing a report. Law contracted for the assessment as a way to protect the assessment report, which deals with sensitive security matters, from disclosure under the state open records law.

Consultants Completed Much of the Work Before Contracts Were in Place

Black and Veatch completed most of the work to assess vulnerabilities before the contracts were in place. Black and Veatch visited water facilities to assess vulnerabilities in August and September 2002, well before the contracts were in place in October and December 2002.

Allowing contractors to work before executing a contract exposes the city and the contractor to risk. By not having a contract in place, the city could pay for work that is never agreed to. Without an approved contract, both the city and the contractor lack clearly defined scope of services, increasing the chances the city will pay for unnecessary work.

City Staff Moved Money between Contracts, Avoiding Council Approval

City staff moved money from the Law contract to the Water Services contract, reducing the amount of the Law contract to \$99,712, below the

threshold requiring City Council approval. The city initially planned to enter into a contract between Law and Black and Veatch for \$101,756. At the time, City Code required contracts above \$100,000 to be considered for approval by the City Council, but staff in both departments misunderstood the requirement. Rather than bring the contract to the City Council, city staff reduced the Law contract by \$2,044 and amended the Water Services contract by adding \$2,044. After moving the money between contracts, neither contract met the \$100,000 threshold.

While the contracts weren't approved by the City Council, it was informed of the EPA grant program and the city's efforts to assess security vulnerabilities. The City Council directed Water Services to participate in the EPA grant program and later appropriated the grant funding for the consultant services.

City Needs Tools to Address Homeland Security Issues

Local governments' emergency preparedness had focused on natural disasters and disruptions in service rather than intentional acts. However, the federal government has identified local infrastructure as a possible target for terrorists. Local governments now must coordinate with federal agencies to protect infrastructure and safeguard hazardous materials that could be used as weapons.

Experts recommend several ways the city can best use its vulnerability assessment and emergency response plan to protect the water system from intentional terrorist acts.

- Periodically update the vulnerability assessment and emergency response plans.
- Periodically test the emergency response plan and test existing security measures.
- Develop procedures that address coordination among city departments (including the water utility, police, fire, health, emergency management and others) and other agencies (law enforcement, other utilities, other jurisdictions, etc.).
- Monitor implementation of security improvements, including recommendations from the vulnerability assessment.
- Define the oversight roles and responsibilities of the City Council.

- While considering threats and risks, balance the costs and benefits of improved security and emergency response.
- Provide information about security and preparedness to the public while protecting sensitive information.

Updating Information and Coordination Among Departments Strengthens Security

The city needs current security information and departments need to coordinate to provide security and respond to emergencies. As the city adds or changes facilities, security assessments need to be updated. In the event of an emergency, city departments, emergency responders and other jurisdictions need to respond and coordinate their responses. Up-to-date security assessments and coordination procedures should improve security.

City will need to update assessment and plans. The Director of Water Services agrees the city will need to update the assessment and plans, but notes that doing so will cost money. As the city adds or changes facilities, the security assessment needs to be updated. Water Services moved to its new headquarters building after completing the vulnerability assessment. To address security at the headquarters building, Water Services had a security consultant walk through the new water headquarters building and propose ways to protect the facility.

Utilities should update assessments and response plans to address changing threats, new facilities, and new procedures. The federal government has not set requirements for updating assessments and plans, but encourages utilities to regularly review and update them. Experts suggest updating assessments and response plans periodically, with a range of about two to five years, and whenever facilities change significantly.

Departments need to coordinate on security issues. The Director of Water Services told us that coordination is complicated and that the city, through the Emergency Management Office, has begun addressing coordination. The Emergency Manager noted that coordination can be difficult when different departments make decisions about security upgrades.

Responding to an emergency requires coordination among city departments, emergency responders, and other agencies. Responding to a security threat could be compared to responding to a natural disaster such as a flood. The city's plans for flood response define roles and

responsibilities for the City Manager's Office and the Fire, Parks and Recreation, Police, Public Works, and Water Services Departments. Responding to security threats may also involve coordination with federal law enforcement and other jurisdictions.

The City Manager plans to consolidate all security functions in the Office of Emergency Management. The Emergency Manager will be expected to ensure the city develops common policies and procedures about security, including emergency response and homeland security.

City Should Monitor Security

The city should test security measures and track efforts to improve security. Exercises and tests help management monitor security and identify areas that need improvement. Management should also track implementation of security recommendations.

Periodically test plans and security measures. The Director of Water Services noted that the department conducts drills and tabletop exercises periodically. In a tabletop exercise staff from one or more departments work through a scenario intended to simulate the information and decisions they would face in a real emergency. Testing response plans helps agencies understand their capabilities and improve coordination.

Benefits of testing security plans

Security drills and "exercises test and validate policies and procedures, test the effectiveness of response capabilities, increase the confidence and skill levels of personnel, and identify strengths and weaknesses in response before they arise in actual incidents....Overall, training, as it relates to facility protection, provides decision makers with data on performance in various scenarios."

The Transportation Security Administration uses covert tests to assess airport screening. TSA employees try to pass threat objects through screening points to identify systematic problems, adherence to procedures, and use of screening equipment.

Sources: *Further Actions Needed to Coordinate Federal Agencies' Facilities Protection Efforts and Promote Key Practices*, November 2004, and *Challenges Exist in Stabilizing and Enhancing Passenger and Baggage Screening Operations*, February 2004, U.S. General Accounting Office.

Water Services task force monitors some security improvements. A task force of Water Services employees review progress on improving security. The task force meets about every two months and discusses progress on security upgrades. The task force focuses on

recommendations related to capital improvements and doesn't address other recommendations from the vulnerability assessment. The city hasn't budgeted money to implement all of the recommendations from Black & Veatch.

City Should Define Council Role and Report Performance Information

The City Council's role in addressing security issues needs to be more clearly defined and the city should report performance information. The City Council created the Office of Emergency Management before local governments' role in national security increased. Providing performance information about how the city addresses homeland security improves accountability and citizen confidence.

City Council role needs to be clear. The City Council has a role in setting security policies, making spending decisions, and overseeing program results. For example, the City Council should consider the need for policies addressing:

- How does the city balance the need to keep water rates low with the need to pay for capital improvements to strengthen security?
- How often and in what form should management report security performance measures to the City Council?
- How should the city balance trade-offs between increased security and decreased convenience and access?
- How and when should the City Council be notified of threats or actual terrorist events?

Setting policies addressing these sorts of questions would clarify the City Council's role.

Making information public improves accountability. Performance and financial information about security improvements helps ensure accountability. Reporting performance measures can increase citizen confidence in the city's efforts to provide security.

Water security experts have begun developing best practices and ways to measure performance. The Water Security Working Group, organized under the National Drinking Water Advisory Council, plans to release recommendations in May 2005 that will identify best security practices and mechanisms to measure the extent of implementation of best security

practices. The recommendations could help the city establish and report on security performance.

The city hasn't routinely reported on security and preparedness. Currently, the city does not have performance measures or produce annual reports relating to security issues. The city should report performance measures to inform residents about security levels. Without reporting, residents have little information about how government addresses security.

Though some of the security information is sensitive, state law provides a mechanism for protecting sensitive security information. The city can close certain records related to terrorism when disclosure of the records would impair the city's ability to protect the safety or health of persons, and the public interest in nondisclosure outweighs the public interest in disclosure. To close records under this part of state law, the city has to make these declarations in writing.

Recommendation

1. As the City Manager consolidates security functions, he should ensure that the city addresses:
 - Updating security assessments and plans;
 - Coordinating security and response;
 - Testing and monitoring security improvements;
 - Providing information to the City Council and the public; and
 - Defining the City Council's role.

Appendix A

Method to Identify Good Practices

We interviewed experts to identify what Kansas City should do with the vulnerability assessment. To identify experts, we talked with staff from the EPA Office of Inspector General and the Director of Water Services. We then interviewed six people with a wide range of expertise, including experts in: water utility security and vulnerabilities; law enforcement; bioterrorism and public health; homeland security; and emergency management.

After we interviewed all of the experts, we reviewed the information they provided to identify practices frequently recommended. We listed seven practices, which we shared with the experts and the Director of Water Services. The seven practices are:

- Periodically update the vulnerability assessment and emergency response plans.
- Periodically test the emergency response plan and test existing security measures.
- Develop procedures that address coordination among city departments (including the water utility, police, fire, health, emergency management and others) and other agencies (law enforcement, other utilities, other jurisdictions, etc.).
- Monitor implementation of security improvements, including recommendations from the vulnerability assessment.
- Define the oversight roles and responsibilities of the City Council.
- While considering threats and risks, balance the costs and benefits of improved security and emergency response.
- Provide information about security and preparedness to the public while protecting sensitive information.

We shared the list with the Director of Water Services and the city's Emergency Manager and asked for their assertions of how the city was addressing each practice. Our audit report is based on those assertions from management.

Appendix B

City Manager's Response

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KANSAS CITY
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Office of the City Manager

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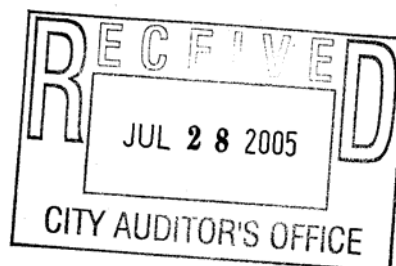
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DATE: June 1, 2005

TO: Mark Funkhouser, City Auditor

FROM: Wayne A. Cauthen, City Manager *J.A.C.*

SUBJECT: Response to Recommendations in the Performance Audit on Water System Security



The recent audit of Kansas City's assessment of vulnerabilities of the water systems resulted in one recommendation. I submit to you my response:

Recommendation 1: *As the City Manager consolidates security functions, he should ensure that the city addresses:*

Updating security assessments and plans

Coordinating security and response

Testing and monitoring security improvements

Providing information to the City Council and the public

Defining the City Council's role

Response: *Agree.* The city took its first steps toward addressing enterprise-wide security needs when the Office of Emergency Preparedness (EOC) opened on March 1, 2004. The state-of-the-art EOC features a new Tiburon radio communications system, and WebEOC, which will allow the office to communicate with other cities in the metropolitan area and receive information in real time. It also allows for instant communication between the EOC, dispatch centers and the fire and police departments.

Updating security assessments and plans. The first step toward completing this task was completed in the fourth quarter of 2004 when EOC manager, D.A. Christian, and City Wide Security Manager, David Severnuk conducted an enterprise-wide security survey. The next step that will be taken is a risk assessment of all the city's facilities and assets.

Coordinating security and response. The city has taken the initial steps to complete this task as well. The EOC is currently leading the the process to coordinate with regional and federal officials to properly adopt and implement the terrorism early warning program (TEW) here in Kansas City.

Testing and monitoring security improvements. This task is an integral part of the previous task, and is part of that process.

Providing information to the City Council and the public. Water services will provide an informational update to the City Council about water systems security at Business Session on an annual basis.

Defining the City Council's role. The Operations Committee of City Council addresses policy issues in this area, and it is appropriate that when concerns surrounding water systems security arise, the Operations Committee should be apprised. In more wide-spread situations, it may also be appropriate to appear before the Neighborhoods Committee. One of, or both these committees should take the lead in sponsoring ordinances and information sharing back to the full council before it is heard at Legislative Review.

Please note: As we engage in the implementation of enterprise-wide solutions for security systems, there are special federal standards that will supersede the city's standards for the Aviation and Water Departments; similarly, there will be some special coordination we will have to take into consideration with our state-governed Police Department.